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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,724	09/28/2001	Jean-Marie Aubry	2001-1443A	7009

513 7590 05/08/2003

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EXAMINER

PRICE, ELVIS O

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 05/08/2003 //

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,724

Applicant(s)

AUBRY ET AL.

Examiner

Elvis O. Price

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claims 1-11 are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. {J. Chem. Soc., Perkin Transactions 1, 1975, pp. 1610-1614}, in view of Van Laar et al. {Chem. Commun., pp. 267-268}.

Applicants claim a process for the oxidation of hydrophobic organic substrates, by means of singlet oxygen, which comprises adding between 30% to 70% hydrogen peroxide to the said substrates in an organic solvent in the presence of a homogeneous catalyst.

Barton et al. teach a process for the oxidation of a hydrophobic organic substrate which comprises adding a homogeneous molybdate (ammonium or sodium molybdate)-hydrogen peroxide catalyst (30% peroxide was used to make the catalyst) to the substrate(s) in the presence of an organic solvent such as tertiary butanol (see pg. 1612, second column, experimental section). The difference between the presently claimed invention and what is taught by the Barton et al. reference is that Barton et al. do not explicitly teach that the oxidative reaction takes place by means of singlet oxygen and Barton et al. are silent about the reaction temperature.

Van Laar et al. teach that singlet oxygen can be generated from alkaline hydrogen peroxide in the presence of homogeneous metal ion catalyst such as molybdate (see first paragraph of page 267).

Thus, it would have been *prima facie* obvious to one having ordinary skill in the art to arrive at the presently claimed invention, because Barton et al. teach an oxidation process which comprises adding 30% hydrogen peroxide to hydrophobic organic substrates in an organic solvent in the presence of a homogeneous catalyst (ammonium molybdate or sodium molybdate) and Van Laar et al. teach that singlet oxygen is generated as a reactive species, from alkaline hydrogen peroxide in the presence of homogeneous metal ion catalyst such as molybdate. Additionally, one of ordinary skill in the art would have expected that the reaction temperature of the Barton et al. oxidation process was room temperature since Barton et al. were silent about the reaction temperature.

The skill artisan would have been motivated to oxidize organic substrates as presently claimed, in view of the teachings of the Barton et al. and Van Laar et al. references, using the molybdate-hydrogen peroxide homogeneous catalyst taught by Barton et al., so as to arrive at alternative means, depending on cost and availability of the said catalyst system, for oxidizing hydrophobic organic substrates.

Response to Arguments

Applicants' arguments filed 2/20/02 have been fully considered but they are not persuasive.

Applicants argue that the homogeneous molybdate catalyst system in the Van Laar et al. reference requires the presence of a soluble base (alkaline conditions) whereas the homogeneous molybdate catalyst system in the presently claimed invention is absent of added base.

This argument is not convincing because the Examiner has applied the Van Laar et al. reference to demonstrate to applicants that the molybdate-hydrogen peroxide catalyst system proceeds via a singlet oxygen intermediate in oxidation reactions. It is still the Examiner's contention that the oxidation reaction(s), carried out with the homogeneous molybdate-hydrogen peroxide catalyst system in Barton et al. reference, proceeds via a singlet oxygen mechanism. And the molybdate-hydrogen peroxide catalyst system taught by the Barton et al. reference does not have any added base.

Applicants continue to argue that the fact that compound V is converted into compound VI (instead of compound VII) with molybdate-hydrogen peroxide, according to Barton et al., implies that it is unlikely that the singlet oxygen intermediate is being formed despite a difference in temperature in the molybdate-hydrogen peroxide reaction versus the cerium-hydrogen peroxide reaction.

This argument is not persuasive because the difference in the reaction conditions of the molybdate-hydrogen peroxide reaction versus the cerium-hydrogen peroxide reaction (as described in Barton et al.) are not merely a temperature difference, as applicants have asserted, but rather the two separate reactions also differ by the amount of catalyst utilized, hydrogen peroxide, and solvent as well as the reaction times. Also, the Barton et al. reference (page 1612, paragraph one) confirms that

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singlet oxygen generation is not determined by the specific product that is formed in oxidation reactions since the treatment of compound V with photo energy (via a singlet oxygen mechanism) versus the cerium-hydrogen peroxide catalyst system gives different products, respectively.

Applicants appear to suggest that the molybdate mediated oxidation reaction described in the Barton et al. reference, might be a photochemical reaction by stating that photochemical oxidation is carried out at room temperature because heating is very uncommon for photochemical singlet oxygenations and Barton et al. describes (on page 1612, first column) that with photochemically generated singlet oxygen at room temperature compound V is transformed into IX as the major product after reduction of VII to IX. Applicants then assert that this is similar to the absence of any specification for the temperature at which the molybdate oxidations were carried out, which are assumed (by the Examiner) to be carried out at room temperature).

This argument is not convincing to the Examiner because it is of common knowledge, to one having ordinary skill in the art, that photochemical reactions are not the only type of chemically reactions that are carried out at room temperature. Hence, a reaction carried out at an unspecified reaction temperature (as in the molybdate oxidations described in the Barton et al. reference) should not be definitively construed as a photochemical reaction. The Examiner would also like to remind applicants that the presently claimed invention (Independent claims 1 and 9) does not exclude photochemical oxidation reactions, which may generate singlet oxygen.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 703 605-1204. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703 308-4532. The fax phone numbers for the organization where this application or proceeding is assigned is 703 308-4556 for regular communications.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

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Elvis O. Price, Ph.D.

May 4, 2003


ACTING FOR
Johann R. Richter, Ph.D., Esq.
Supervisory Patent Examiner
Technology Center 1600